



The Scope of the Challenge for
Fort Monroe Authority Board of Trustees Meeting
Bay Breeze Conference Center
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The Building Inventory report summarized the improved property inventory on Commonwealth property or buildings expected to be leased from the NPS at 245 buildings totaling approximately 1.96 million (M) square feet (SF). Of that number 147 buildings totaling approximately 1.6M SF are designated as contributing to the National Historic Landmark District (NHLD). These buildings require that the FMA follow the Secretary of the Interior's Standards for the Treatment of Historic Properties that, among other things, requires that the FMA prevent roof leaks and maintain heating and cooling conditions to prevent deterioration of and avoid damage to historic materials. It also sets out standards for repairing any damage to historic materials. An additional 42 buildings totaling approximately 317.7 thousand (K) SF are either occupied or have the potential to generate operating revenue for the FMA.

This report will attempt to estimate the life-cycle maintenance and replacement costs to maintain and repair the inventory of almost 200 buildings using experiential data when available or industry estimates when historic data is not available. This report will also attempt to provide some estimates for the costs to reuse the large inventory of vacant office buildings. Finally, this report includes some information on the challenge to meet the preservation requirements set out in the FMA's governing documents.

Roofing Systems

The first line of defense for preserving property is to keep the buildings dry. In response to several reported roof leaks and numerous missing shingle tabs after Hurricane Matthew, the FMA staff hired a contractor to inspect all the residential and garage roofs and prepare estimates to repair them as part of the expected insurance and FEMA claims. Based on the contractor's assessments, the vast majority of the asphalt roofs at Fort Monroe are at or beyond their useful lives. Repairs were recommended only when the roof system was in good condition. The estimates to repair or replace the roofs based on the current condition totaled \$2.28M. This price included some necessary repairs to (but not replacement of) the slate or clay tile roofs and some roof-top chimney mortar repointing, if warranted.

The contractor's condition assessments were compared to the roof condition assessment report done by Ballou Justice Upton (BJU) in 2014, which included residential and selected commercial roofs. Based on the conditions of the roofs in 2014, the four-year estimate (from 2014 to 2017) for roof repairs or replacements was \$2.1M. This report also noted that many of the roof systems of buildings at Fort Monroe are in need of serious repair or replacement.

The BJU report also included a life-cycle cost estimate for roofing systems. Based on the estimated 25-year life of asphalt and built-up roofing the BJU report estimated the life cycle replacement cost for commercial and residential roofs of \$9.7M, or approximately \$388K per year on average. The report also estimates the replacement costs for the slate, clay tile, and copper roofs, which can have useful lives of 50+ years, at \$4.2M in 2014 dollars. Many of these roofs systems are original to the construction of the buildings, dating from 1880 to 1911.

Hurricane Matthew insurance funding and some FEMA hazard mitigation funds may help offset some of the roofing costs but the balance must be funded by other means including Maintenance Reserve (MR) or Virginia Public Building Authority (VPBA) bond proceeds.

The FMA's FY17-18 budget only includes \$62K per year for general building maintenance, which would include non-capital roof repairs. The current level of funding in the budget is not adequate for the FMA to keep up with the anticipated level of roof replacements. Any roof replacements in excess of \$50K may be eligible for capital funding. As a result, roof replacement projects are now reflected as near-term projects in the Capital Improvement Plan (CIP). These projects will utilize bond proceeds that were originally allocated for utility upgrades as part of the Utility Master Plan. This situation is expected to continue as long as the Commonwealth is responsible for the preservation of these buildings.

Heating, Ventilation and Air Conditioning (HVAC)

The FMA contracts with Old Point Comfort Real Estate Services (OPCRES) to manage the commercial (non-residential, non-infrastructure) properties at Fort Monroe. OPCRES utilizes contractors for a variety of functions including HVAC inspections and maintenance. The current HVAC contract is approximately \$200K per year, which covers regular inspections and testing of heating, cooling, and other control systems for the commercial properties. Any repairs and maintenance are billed on a task order basis. For FY16, the task orders totaled \$264.8K. For the first 8 months of FY17, the task orders total \$168.5K, or \$252.8K on an annualized basis. So historic costs for maintaining the commercial HVAC systems costs the FMA approximately \$450-460K dollars per year. This is the single largest line item in the commercial enterprise fund that is projected to operate at a \$2.0M deficit on an annual basis. These deficits are covered by General Fund appropriations.

As a rule of practice, the FMA staff recommends OPCRES submit all contracts for bid every three years. The contract for HVAC inspections is currently being bid. In preparing the RFP for the new HVAC contract, OPCRES inventoried all the major HVAC equipment in the commercial buildings. Other than the new boilers in Buildings 100 and 139 that were installed after Hurricane Matthew, almost every piece of major HVAC equipment is past its expected life. Within the next 20 years, the entire HVAC inventory will likely need to be replaced. While detailed quotes have not been solicited for the entire portfolio, estimates have been received for projects currently under investigation.

- The central plant in Building 134 that serves Buildings 37, 116, 133, 134, 161, and 163 was estimated at \$800K to replace the boilers and chillers.
- The Casemate Museum HVAC replacement with required electrical upgrades is estimated at \$75K.
- The HVAC system repairs in the Chapel Center (Casemate 21) is estimated at \$66K before evaluating the condition of the electrical system to support the new HVAC equipment.

In an attempt to estimate the life-cycle replacement costs for the commercial HVAC equipment the FMA staff consulted the American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) website for guidelines on heating and cooling costs for new buildings since it is assumed that all the existing equipment will be replaced with new equipment within the next 20 years.

The ASHRAE guidance provides a range of cooling tonnage of .25-.35 tons per 100 SF of building area. Totalling the commercial building inventory but excluding industrial/storage SF for cooling (since the warehouses typically only have heat) identifies approximately 1,159K SF of conditioned commercial space. Using an average of the ASHRAE guideline (.3 tons per 100 SF) results in approximately 3,477 tons of cooling for the portfolio. Obviously this is an oversimplification since each building cooling load is based on building construction, number of windows and doors, number of floors, etc. But, in order to estimate the cost of the replacing the air conditioning equipment, it does provide a reasonable approximation. Using information from several equipment manufacturers and HVAC contractors an average rate of \$1,600 per ton was calculated resulting in an estimated equipment cost of \$5.56M. This price does not include the design (6-8% of cost), permitting, installation (6-12% of cost), duct work replacement, energy control systems or electrical upgrade costs that would increase the number significantly.

The ASHRAE website provides a range of heat BTU guidance that averages 2 MBH per 100 SF of building area. Totalling the commercial building inventory and 50% of the industrial/storage square footage (since those buildings typically have some heat) results in an inventory of approximately 1,225K SF. Using the ASHRAE guideline results in an approximate heating demand of 24,500 MBH. Once again, using information from several equipment manufacturers and HVAC contractors, an average rate of \$28 per 100 BTU was calculated, resulting in an estimated equipment cost of \$6.86M for the heating equipment. As above, the cost of design, permitting, installation, ductwork, control systems, and other required upgrades would increase the number significantly.

The residential portfolio is smaller and more easily quantified. The 81 residential buildings (excluding the Chamberlin) total 417.8K SF. Using an industry rule of thumb of 600 SF per ton results in an estimate of using 696 tons of HVAC requirements. Local suppliers and industry professionals estimate the cost in HVAC at \$2K per ton installed resulting in an estimated cost to replace the residential HVAC units of \$1.39M. Since the average life expectancy for air conditioning systems is 12-18 years and the average life expectancy for natural gas heating systems is 20 years the FMA can expect to replace the vast majority of the residential HVAC units over the 20-year period.

While these are very rough estimates based on industry averages spread over a variety of building types it is reasonable to believe that the cost to replace the HVAC systems on the commercial buildings would be in the \$10-\$12M range over a 20-year period and could be significantly more if the aforementioned upgrades are required. This would average \$500-\$600K per year in capital projects. The residential HVAC costs would be more manageable, averaging \$69.5K per year. With no other source of funding available, HVAC replacement projects are now reflected in the CIP over the next few years, which will also consume bond proceeds anticipated to be used for utility capital projects. This situation is expected to continue as long as the Commonwealth is responsible for the preservation of these buildings.

Residential Gutters and Exterior Wood Trim

All of the residential buildings at Fort Monroe are listed as contributing to the NHLHD. Many of these homes have decorative and ornamental wood trim and internal gutter systems. With our occupancy staying above 90% for the homes in leasable condition, FMA leasing office regularly receives calls from residents about holes in the soffit, fascia, or columns on their homes. Over the last several years, a number of inspections have shown that these conditions usually result from leaks in the internal gutters.

Several years ago, the FMA staff allocated money in the budget to clean and inspect the residential gutters at least annually. The gutter cleaning scope requires the contractor take photos of any suspected leaks and/or damaged wood. As a result of these gutter inspections, the FMA staff implemented an exterior improvement program that focuses on repairing the gutter systems, replacing any damaged wood with like-kind materials, and painting the exterior wood on the home. The FMA staff originally estimated the cost per residential building to be \$25,000 and accordingly budgeted \$100,000 per year to address the worst four units per year. The test project, which was used to verify the process, totaled \$90K by the time it was complete. The cost to fabricate replacement copper gutters caused the FMA staff to identify a paint/fabric coating system to line and seal the existing gutters in lieu of replacement. The four subsequent projects completed over the last two years have averaged \$55K per building.

As mentioned above, the residential inventory includes 81 buildings. Researching internet sites finds recommendations that painting of exterior wood surfaces should be completed every 5 – 15 years. Using 10 years as an average indicates that the FMA would need to paint roughly eight residential buildings per year. At an average of \$55K per unit multiplied by the 76 homes remaining to be repaired and painted would result in an estimated total cost of \$4.18M. On average, the FMA would need \$400-\$500K per year to keep up with the painting requirements, just on the residential homes.

Many of the commercial buildings have exterior wood trim. Some of the older buildings have internal gutter systems that result in similar damage. The FMA staff is working with Guernsey Tingle to address the significant damage to the exterior porches and second floor fascia/soffit on Building 77 caused by leaking internal gutters. This will be the first commercial project to address the condition of gutters and wood trim. The project is currently being reviewed by the Department of Historic Resources (DHR), NPS, and Army so it has not been submitted for contractor bids. For the sake of discussion, assuming the repair costs for similar damage will be in the same range as the residential projects and multiplying by the 62 contributing commercial buildings would yield an estimated funding requirement of \$3.4M, or \$340K annually over the 10-year period.

The FMA is also responsible for 32 residential garage buildings in varying sizes from single bay to 12-bay buildings. These buildings are wood-sided units and will need to be painted in the future. The garage units have not been painted since the property transferred in 2013 so no historic data is available.

It is expected that the cost of projects will decrease over time if the FMA can maintain a regular painting schedule. That is based on the assumption that the gutter lining product is effective over the life expectancy promoted by the manufacturer. If the copper gutters need to be replaced, the FMA would need significantly more funding to address the aging gutter systems and the resulting damage to exterior wood trim.

These projects are difficult to fund with bond proceeds since the bond proceeds are not intended to pay for ongoing maintenance that has a life expectancy of less than the 20-year amortization of the bond issuance. Therefore, the FMA would need to request additional general fund appropriations to address these conditions if these building remain the fiscal responsibility of the Commonwealth.

Commercial Office Buildings

One of the largest financial challenges facing the FMA is the significant inventory of vacant buildings formerly used for administrative purposes by the Army. Some of these buildings were originally constructed as residential buildings (5, 10, 100, and 139) but converted by the Army to administrative buildings. The building inventory database reports 46 buildings totaling roughly 790K SF as currently configured as office space. Of that inventory, 27 buildings totaling nearly 648.6K SF are listed as contributing to the NHLD. Of the total office inventory, 70.9K SF are leased, approximately 9% of the available space. The non-contributing inventory is 43% leased while the contributing buildings are only 1.5% occupied.

There are two significant components of the challenge presented by the office inventory. The first is the carrying costs for utilities, maintenance, insurance and taxes on the vacant inventory. In an attempt to quantify the carrying costs for this inventory, a combination of historic and industry guidelines will be used.

- Utilities – The carrying costs for utilities is difficult to calculate due to the lack of meter readings on individual buildings. The Army developed a per square foot (PSF) calculation for billing the FMA on the master-leased building prior to the reversionary transfer in August 2013. In the continued absence of individual meters, the FMA staff has chosen to use this PSF rate. The Army's (and now the FMA's) PSF utility rates were 27.3 cents for electricity, 3.5 cents for natural gas, 1.5 cents for water and 1.5 cents for sewer. This totals 33.8 cents PSF monthly for utility charges or \$4.056 PSF annually. In comparison, the Building Owners and Managers Association (BOMA), a recognized industry source for the property management business, provides an industry average of \$1.90 PSF annual utility costs. For vacant buildings the Army billed for 10% of the electricity and natural gas only. This results in a 36.9 cents PSF annual cost compared to BOMA's industry average of 96 cents PSF for vacant buildings. Using the Army rate for vacant buildings multiplied by the 719.1K SF of vacant office space suggests an annual carrying cost of \$265.3K while the BOMA guidance suggests the carrying cost is \$690.4K.
- Maintenance – The OPCRES FY17 budget for service contracts and maintenance costs is roughly \$1.48M. Dividing this over the entire commercial inventory of 1.28M SF provides a budget estimate for maintenance of \$1.15 PSF. BOMA provides a guidance of \$2.31 PSF for occupied building and \$1.00 PSF for unoccupied buildings. Using the OPCRES budget number multiplied by the vacant office inventory yields an estimated annual maintenance cost of \$825.9K for the vacant buildings. Using the BOMA guidance results in an estimate of \$719.1K.
- Insurance – The Virginia Department of Risk Management (DRM) provides insurance coverage for state-owned buildings. DRM bills the FMA 11 cents PSF for insurance coverage. This results in a carrying cost for the vacant office portfolio of \$79.1K in annual premiums.
- PILOT Fee – The City assesses the property at Fort Monroe and bills the Payment in Lieu of Taxes (PILOT) fee at the City's tax rate in accordance with VA Code § 2.2-2342. The current biennial budget bill caps the maximum annual PILOT payment at \$983,960. The City Assessor's website reflects the FY17 PILOT bill at \$1,036,567. Based on the budget cap, the FMA is paying 94.9% of the annual PILOT bill.

The City assessments vary by age and condition across the office building inventory. A review of the assessments reflect an average assessment of contributing buildings of \$70 PSF. The non-contributing office buildings (mostly the Butler buildings built in 2004/2005) are assessed at an average of \$100 PSF. Applying the 94.9% factor from above means the net assessed rate is \$66.43 PSF for contributing buildings and \$94.90 PSF for non-contributing buildings. Applying these two rates to the vacant office portfolio reflects a carrying cost for the PILOT payment of roughly \$620.1K.

In summary, using OPCRES budget numbers and actual charges for insurance and PILOT fees shows the carrying cost for the vacant office portfolio is estimated at \$1.79M annually or \$2.49 PSF of vacant office space per year. Using the BOMA guidance for maintenance and utilities results in an estimated carrying cost of \$2.1M per year for or \$2.93 PSF.

The second significant component of the vacant office portfolio is the expected cost for tenant improvements to re-lease the buildings. This number is difficult to calculate since Building 77 is the only contributing building with commercial tenants. Based on the report presented to the Board of Trustees at the December 2016, meeting the FMA spent \$70 PSF for the renovation of Building 80 into 10 apartment units, \$70 PSF for the alternations to Building 12 for the Oozlefinch Craft Brewery, and \$108 PSF for the renovation of Building 83 as the FMA's main office. Since the Building 83 renovation involved some minor alterations to the structure to make the building usable as an office space it will be used as the benchmark estimate for the cost of re-tenanting the existing contributing buildings. And estimate of \$50 PSF will be used for the tenant improvement cost for the non-contributing buildings. With a vacant contributing inventory of 638.5K SF, the estimated cost for tenant improvements to lease the building to tenants is \$69.6M. The vacant non-contributing inventory of 80.5K SF could require another \$4.0M to attract new tenants.

Previous conversations with the Department of Treasury and the Department of Planning and Budget have indicated that tenant improvements are not eligible for MR or VPBA funding because the tenant improvement useful life is expected to be the term of the lease and the bond funding requires the asset life to exceed the life of the bond amortization (20 years).

High Priority Preservation Projects

There are a number of preservation projects across the Fort Monroe property that require near-term funding to arrest or reverse the decline in the condition of the existing contributing inventory. The FMA staff has allocated funding for some of these projects but unforeseen priority projects have resulted in the funding being redirected to other projects. Some of these projects may qualify for capital funding but, once again, that would divert bond proceeds originally allocated for utility projects into capital building repairs. These projects are listed by building number and not in priority order.

- Building 8 – This 390 SF building is located in the northwest corner of the inner fort. It was originally constructed as a laundry facility in 1887. An addition was added in 1904 and removed in 2015 due to its seriously dilapidated condition. It is listed as a contributing building to the NHL. The original brick structure is in serious need of mortar repointing. The building contains lead-based paint, which makes the repointing process more complicated. An historic masonry contractor provided an estimate of \$80,000 to remove the lead-based paint and repoint the severely deteriorated mortar on the building.

- Building 14 – This Folk Victorian single-family residential unit was constructed in 1880 and is located facing the Parade Ground. The building is listed as a contributing building. Due to the extreme conditions of the building the interior was not re-measured during 2016 but is shown on the Army inventory to contain 3,694 SF. This building has suffered from a lack of maintenance since its last use as the Casemate Museum Library prior to the decommissioning of the Post. The roof, siding, and HVAC need to be replaced. The front porch is held up by temporary supports. The building may be beyond repair but if no action is taken soon, the building may be lost. While no formal quotes have been obtained, the FMA staff estimates the total repairs necessary to restore this unit to leasable condition to be in the range of \$500-\$750K.
- Building 15 – This Folk Victorian residential duplex was constructed in 1878 and is facing the Parade Ground and adjacent to the Chapel of the Centurion. The building is listed as a contributing building. Each side of the duplex was recently measured at 3,067 SF. The building has been vacant since before the September 2011 decommissioning of the Post. The building has a two-pipe HVAC system generally found in commercial buildings. The building has experienced roof leaks, broken water pipes, and damage to floors and plaster walls due to problems with the HVAC system. The exterior walls are covered in siding that needs to be inspected, repaired, or possibly replaced. The exterior trim of the building is in poor condition and in need of scraping and painting. It is presumed to have lead-based paint. While no formal plans have been developed to govern the scope of the work, the FMA staff estimates the total repairs necessary to restore this unit to leasable condition to be in the range of \$200-\$250K. If the two-pipe system is replaced with a forced air system the price could approach \$300K.
- Building 19 – This Folk Victorian single family residential unit was constructed in 1880 and is located adjacent to the entrance of the Casemate Museum and the Postern Gate. The building is listed as a contributing building. It was recently measured at 2,468 SF. The building was last occupied in February 2013. The building has a two-pipe HVAC system generally found in commercial buildings. The building has experienced several roof leaks. The HVAC system has been leaking for many years and has caused significant damage to the hardwood floors and plaster ceilings. The FMA staff is proposing to install a forced-air HVAC system and repair the walls and ceilings. The exterior walls are covered in siding that also needs to be evaluated and repaired or possibly replaced. The exterior trim of the building is in fair condition and in need of scraping and painting. It is presumed to have lead-based paint. A set of plans was developed by a local historic architect and is being readied for submittal to DHR and BCOM. While no formal quotes have been obtained, the FMA staff estimates the total repairs necessary to restore this unit to leasable condition to be in the range of \$150-\$200K. If the siding needs to be replaced the cost could approach \$250K.

- Building 39 – This 528 SF building is located next to Building 93 and is one of the few remaining residential service buildings, originally built around 1910 as the carriage house for the Arsenal Commander who resided in Building 93. It is listed as a contributing building to the NHLD. The original brick structure is in serious need of mortar repointing. The interior of the building has been parged with a coat of plaster, which makes the repointing process more complicated. An historic masonry contractor provided an estimate of \$80,000 to remove the parging and repoint the severely deteriorated mortar on the building.
- Building 62 – This Folk Victorian residential duplex was constructed in 1889 and is facing the Parade Ground. The building is listed as a contributing building. Each side of the duplex was recently measured at 3,299 SF. The building has been vacant since before the September 2011 decommissioning of the Post. The building has a hot water boiler feeding baseboard radiators. Conditioned air is provided by window units. The building has experienced roof leaks and leaks from the baseboard radiators that have damaged the floors and plaster walls. The exterior walls are covered in siding that needs to be repaired or likely replaced. The exterior trim of the building is in poor condition and in need of scraping and painting. It is presumed to have lead-based paint. While no formal plans have been developed to govern the scope of the work, the FMA staff estimates the total repairs necessary to restore this unit to leasable condition to be in the range of \$250-\$300K. If the baseboard radiator system is replaced with a forced air system the price could approach \$400K.
- Building 63 – This Folk Victorian residential duplex was constructed in 1889 and is facing the Parade Ground. The building is listed as a contributing building. Each side of the duplex was recently measured at 3,299 SF. The building has been vacant since before the September 2011 decommissioning of the Post. The building has a hot water boiler feeding baseboard radiators. Conditioned air is provided by window units. The building has experienced roof leaks and leaks from the baseboard radiators that have damaged the floors and plaster walls. The exterior walls are covered in siding that needs to be repaired or likely replaced. The exterior trim of the building is in poor condition and in need of scraping and painting. It is presumed to have lead-based paint. While no formal plans have been developed to govern the scope of the work, the FMA staff estimates the total repairs necessary to restore this unit to leasable condition to be in the range of \$250-\$300K. If the baseboard radiator system is replaced with a forced air system the price could approach \$400K.
- Emergency Exit Assessment – The FMA staff hired Guernsey Tingle under its existing term contract to inspect and assess the condition of the numerous emergency exit structures at Fort Monroe. McPherson Design Group was retained by Guernsey Tingle for the structural assessment of the project. During the inspection McPherson identified a deficient condition on the two exterior exit towers on Building 80. The engineer recommended that repairs be completed immediately or the stair towers be closed to public use. The engineer also identified an exit stairway from Building 133 that was severely compromised. Since that building is currently unoccupied the stairway was been tagged as off limits and the exit from the building has been barred. The FMA staff is still waiting for the final report but it is expected that additional conditions will be identified that will require near-term repairs, but no budget figures are available yet.

Understanding that more analysis is required to determine if any investment in Building 14 is economically feasible, the other projects on contributing properties of significance would require estimated funding of \$1.0 - \$1.5M. Adding Building 14 could raise this funding requirement to \$1.5 – \$2.25M.

The FMA had budgeted funding of \$340K to begin to address the conditions on Buildings 15, 19, 62, and 63 but the emergency repair to the Building 80 exit stairs (\$100-120K), the Casemate Museum electrical upgrade and HVAC replacements (\$75-100K), and the portion of the Main Gate water line project not covered by the insurance proceeds (\$110K) have consumed the allocated funding. Therefore, the four residential projects must be delayed until adequate funding is available.

Contingency Funds

The FMA staff recommends the establishment of a \$250K line item in the budget to provide for annual funding to address the emergency repair projects that arise such as the three mentioned in the preceding paragraph. This will allow for the FMA to spend budgeted funds for their intended purposes in lieu of redirecting those funds for emergency projects. If no emergencies arise in a given year the funding could be applied toward accelerating roofing, HVAC or exterior improvement projects.

Conclusion

While the information presented above is based largely on estimates, it indicates that the FMA does not have access to adequate funding to meet the preservation requirements of the governing documents and to provide for tenant improvements to reoccupy the vacant office buildings.

The FMA staff recommends:

- Additional annual appropriations be sought from the General Assembly to support the roofing, HVAC, and exterior improvement programs. The amount of additional funding should be enough to fill the gaps listed above and allow the FMA to move closer to exemplary stewardship of contributing property. Based on the estimated annual need, the FMA should seek \$2.0M in additional annual appropriations (\$1.75M for repairs, \$250K for emergency repairs).

For reference, the FMA's original appropriation for FY15 was \$6.7M before the mandatory 5% reduction. The current appropriation for FY17 after the 5% reduction is \$5.08M. The FY18 appropriation after the 7.5% reduction is \$4.97M. The Department of Planning and Budget has supported our budget requests in recent years but this will be a big increase compared to the current level.

- One-time funding of \$1.5M be sought in the form of a supplemental FY17 appropriation or support from the Fort Monroe Foundation or other charitable organization to provide funding for the aforementioned high priority preservation projects.

For reference, the FMA requested and received a \$701.6K supplemental appropriation in FY14.

- The FMA staff should work aggressively with its contractors to complete the studies necessary to provide informational packages for groupings of the vacant commercial properties to obtain proposals from qualified historic redevelopers to move the fiscal responsibility for the large inventory of vacant buildings to private investors through either ground leases or fee simple sales.